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Portland, OR 97205

EXAMINER

HENRY, MATTHEW ALLAN

ART UNIT	PAPER NUMBER
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2116

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/016,254

Applicant(s)

CRUTCHFIELD ET AL.

Examiner

Matthew A. Henry

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 25-27 is/are rejected.
- 7) ☒ Claim(s) 23,24 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/2/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "74" has been used to designate both the suspend circuit in Figures 4 and 7 and a resistor in Figure 4. It is expected that suspend circuit has been incorrectly labeled 74 instead of 72 as shown in Figures 3 and 5.
2. Figures 1a-1c should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
3. The drawings are objected to because Figure 3 depicts Item 22, the bus cable, as being the connection method between Items 52 and 56. These two items are internal to the peripheral. Item 22 should be connected between Items 64 and 52, elements of the computer and peripheral devices, respectively.

4. The drawings are objected to under 37 CFR 1.83(a) because:

They fail to show how Item 72, the suspend circuit, is controlled in Figures 5 and 7. The suspend circuit is an important aspect of the particular embodiment, as it controls the voltage regulator. However, there are no inputs to the suspend circuit. Additionally, Item 18 is not labeled in Figure 1C. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing

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should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:

On Line 32, “resisters” should be replaced with the word “resistor” to be correct.

On Lines 31-34, it may be clearer to say, “By properly tuning the local power supply 54 and either the regulator circuit 80 of FIG. 3 or the voltage regulator 90 and resistor 92 of FIG. 5, the power sharing” Currently, the specification suggests Items 54, 80, 90 and 92 are all inclusive in needing adjustment, when Item 80 and Items 90 and 92 are alternative methods for reaching the same goal.

Appropriate correction is required.

Claim Objections

6. Claim 4 is objected to because of the following informalities:

The claim cites 100 mA as a power threshold, but this is a current threshold.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. **Claims 1-3, 9-15, 18-22 and 25-27 are rejected under 35 U.S.C. 102(a) as being anticipated by Gilbert.**

Concerning Claim 1, Gilbert discloses:

A system for sharing power in a computer peripheral device (Paragraph 7, Lines 11-14), comprising:

a local power supply (Figure 1, Item 48; Paragraph 16, Line 6);

a power supply interface (Figure 1, Item 42; Paragraph 15, Lines 12-13) adapted to receive an external power source (Figure 1, Items 421 and 422; Paragraph 16, Lines 1-2) and

a power sharing circuit coupled to the local power supply and to the power supply interface (Figure 1, Item 46; Paragraph 16, Lines 9-11), the power sharing circuit structured to simultaneously provide power to the peripheral device (Figure 1, Items 461 and 462; Paragraph 16, Lines 15-17) from both the local power supply and from the external power source (Paragraph 19, Lines 9-11).

Concerning Claim 2, Gilbert discloses:

when an amount of power required by the peripheral device is below a power threshold, the power sharing circuit is structured to provide power to the peripheral device from either the

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local power supply or from the external power supply (Paragraph 23, Lines 7-14; the voltage regulator runs the peripheral using only external bus power so long as there is some bus current not being drawn by the primary-function module; this condition means that the maximum threshold here is 500mA, which is the maximum available current from the bus).

Concerning Claim 3, Gilbert discloses:

the power sharing circuit is structured to provide power to the peripheral device from the external power supply when the amount of power required by the peripheral device is below the power threshold (Paragraph 23, Lines 7-14).

Concerning Claim 9, Gilbert discloses:

the external power source is a computer bus (Figure 1, Item 30; Paragraph 15, Lines 6-9).

Concerning Claim 10, Gilbert discloses:

the computer bus is a Universal Serial Bus (Figure 1, Item 30; Paragraph 15, Lines 6-9).

Concerning Claim 11, Gilbert discloses:

the local power supply comprises batteries (Figure 1, Item 48; Paragraph 16, Line 6).

Concerning Claim 12, Gilbert discloses:

A peripheral device (Figure 1, Item 40; Paragraph 15, Line 13) comprising:

a load circuit for consuming power in the peripheral device (Figure 1, Item 49; Paragraph 17, Lines 1-3);

a local power source for providing power in the peripheral device (Figure 1, Item 48; Paragraph 16, Line 6);

a power source interface (Figure 1, Item 42; Paragraph 15, Lines 12-13) adapted to receive an external power source (Figure 1, Items 421 and 422; Paragraph 16, Lines 1-2); and

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a power sharing circuit coupled to the local power supply and to the power supply interface (Figure 1, Item 46; Paragraph 16, Lines 9-11), the power sharing circuit structured to provide power to the load circuit (Figure 1, Items 461 and 462; Paragraph 16, Lines 15-17) from both the local power source and from the external power source at the same time (Paragraph 19, Lines 9-11).

Concerning Claim 13, Gilbert discloses:

when an amount of power required by the load circuit is below a power threshold, the power sharing circuit is structured to provide power to the peripheral device from either the local power source or from the external power source (Paragraph 23, Lines 7-14; the voltage regulator runs the peripheral using only external bus power so long as there is some bus current not being drawn by the primary-function module; this condition means that the maximum threshold here is 500mA, which is the maximum available current from the bus).

Concerning Claim 14, Gilbert discloses:

The device according to claim 12, wherein when an amount of power required by the load circuit is below a power threshold, the power sharing circuit is structured to provide power to the peripheral device from the external power source (Paragraph 23, Lines 7-14).

Concerning Claim 15, Gilbert discloses:

when an amount of power required by the load circuit is above a first power threshold (Paragraph 18, Lines 3-5; the first power threshold is zero power), but below a second power threshold (Paragraph 23, Lines 7-14; the second power threshold is the maximum threshold, 500 mA), the power sharing circuit is structured to provide power to the peripheral device from either

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the external power supply, or from a combination of the external power supply and the local power supply (Paragraph 23, Lines 7-14).

Concerning Claim 18, Gilbert discloses:

the external power source is a computer bus (Figure 1, Item 30; Paragraph 15, Lines 6-9) and is coupled to the power sharing circuit via a bus cable (Figure 1, Item 32; Paragraph 15, Lines 2-4).

Concerning Claim 19, Gilbert discloses:

the computer bus is a Universal Serial Bus (Figure 1, Item 30; Paragraph 15, Lines 6-9).

Concerning Claim 20, Gilbert discloses:

A method for providing power to a load circuit in a computer peripheral device, comprising:

providing from a power source external to the peripheral device power requirements of the load circuit up to a threshold amount of power (Paragraph 23, Lines 7-14; the threshold amount is 2.5 watts, the maximum amount transmittable over a USB connection); and

providing from a combination of the external power source and from a power source internal to the peripheral device the power requirements of the load circuit if the power requirements of the load circuit exceed the threshold amount (Paragraph 23, Lines 7-14; when the load demands greater than 2.5 watts, the battery supplies additional power).

Concerning Claim 21, Gilbert discloses:

providing power requirements from the external power source comprises providing power from a computer bus (Figure 1, Item 30; Paragraph 15, Lines 6-9).

Concerning Claim 22, Gilbert discloses:

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providing power requirements from a computer bus comprises providing power from a Universal Serial Bus (Figure 1, Item 30; Paragraph 15, Lines 6-9).

Concerning Claim 25, Gilbert discloses:

A method for providing power to a load circuit in a computer peripheral device, comprising:

providing an initial amount of power to the load circuit from an external source (Paragraph 23, Lines 11-13);

allowing the load circuit to increase the amount of power drawn from the external source (Paragraph 23, Lines 7-14; the device adds additional power sources when necessary, thus suggesting the load may need varying amounts of power);

monitoring the amount of power drawn from the external source (Paragraph 23, Lines 7-10); and

adding power from a local power source to the amount of power drawn from the external source once the amount of power drawn from the external source exceeds a threshold level (Paragraph 25, Lines 10-14).

Concerning Claim 26, Gilbert discloses:

providing power from an external source comprises providing power from a computer bus (Figure 1, Item 30; Paragraph 15, Lines 6-9).

Concerning Claim 27, Gilbert discloses:

providing power from a computer bus comprises coupling the peripheral device to a Universal Serial Bus (Figure 1, Item 30; Paragraph 15, Lines 6-9).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claim 4 is rejected under U.S.C. 103(a) as being unpatentable over Gilbert.**

Concerning Claim 4, Gilbert discloses a system for sharing power in a computer peripheral device using the example of a high power USB device. Gilbert teaches a system wherein power is supplied from a secondary power source when the power demanded by the system exceeds a certain power level supplied from a first power source. The system, which operates at 5 volts and a maximum of 2.5 watts of power, would produce a current threshold of 500 mA, thus Gilbert does not expressly disclose a threshold of 100 mA. However, the system taught by Gilbert is not limited to systems wherein the peripheral devices are high power USB devices. The teachings to Gilbert equally apply to peripheral devices that run at other current thresholds. Therefore, it would have been obvious to a person of ordinary skill in the art to apply the teachings of Gilbert to other devices whose current threshold is 100 mA for the benefit of supplying additional power to the device when necessary.

11. **Claims 5-8 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbert in view of Zener Regulators.**

Concerning Claim 5, Gilbert discloses:

the power sharing circuit comprises:

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a voltage regulator coupled in series between the power supply interface and a load (Figure 1, Item 46; Paragraph 16, Lines 9-11).

Gilbert, however, does not provide specific details regarding the implementation of this voltage regulator to include a resistive device between the power supply interface and the load as well as a zener diode attached to the resistive device.

It is well known in the field of voltage regulators that placing a resistive device in series between a power supply and a load as well as a zener diode in parallel to the resistive device would create a voltage regulator (*Zener Regulators*, Figure 1). Accordingly, it would have been obvious to a person of ordinary skill in the art to choose to implement the voltage regulator taught by Gilbert with a resistor and zener diode as demonstrated by *Zener Regulators*, thus arriving at the device of Claim 5.

Concerning Claim 6, Gilbert further discloses:

a suspend circuit coupled between the external power source and the load (Figure 1, Item 44; Paragraph 16 and 18, Lines 7-9 and 3-5), the suspend circuit structured to disconnect the load from the external power source responsive to a signal from the power source (Paragraph 18, Lines 6-9).

Concerning Claim 7, Gilbert discloses:

the power sharing circuit comprises:

a voltage regulator coupled in series between the power supply interface and a load (Figure 1, Item 46; Paragraph 16, Lines 9-11).

Gilbert does not, however, mention a resistive device coupled in series with the voltage regulator.

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The voltage regulator described in the claim can be implemented using a zener diode. The applicant states in the specification that the resistive device mentioned in this claim has a “function similar to the resistor 82 of FIG. 3 in that . . . the resistor 92 causes the voltage to drop on the power supplied by the computer bus” (Page 7, Lines 25-27). The purpose of the voltage regulator in the claim, therefore, need only provide the same benefits of a zener diode described in *Zener Regulators* to provide a voltage regulating circuit. Although the voltage regulator is put in series with the power interface and the load when the zener diode is put in parallel, these can still be considered equivalent because the connections of the zener diode may be easily generalized so that it appears to be in series. As mentioned in the Claim 5 rejection above, it is obvious to a person of ordinary skill in the art to use a zener regulator described by *Zener Regulators* as the voltage regulator taught by Gilbert.

Concerning Claim 8, Gilbert further discloses:

a suspend circuit coupled between the external power source and the load (Figure 1, Item 44; Paragraph 16 and 18, Lines 7-9 and 3-5), the suspend circuit structured to disconnect the load from the external power source responsive to a signal from the power source (Paragraph 18, Lines 6-9).

Concerning Claim 16, Gilbert discloses:

the power sharing circuit comprises:

a voltage regulator coupled in series between the power supply interface and the load circuit (Figure 1, Item 46; Paragraph 16, Lines 9-11).

Gilbert, however, does not provide specific details regarding the implementation of this voltage regulator to include a resistive device in series between the power supply interface and

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the load circuit as well as a zener diode attached to the resistive device to serve as a shunt regulator.

It is well known in the field of voltage regulators that placing a resistive device in series between a power supply and a load as well as a zener diode in parallel to the resistive device would create a voltage regulator (*Zener Regulators*, Figure 1). Accordingly, it would have been obvious to a person of ordinary skill in the art to choose to implement the voltage regulator taught by Gilbert with a resistor and zener diode as demonstrated by *Zener Regulators*, thus arriving at the device of Claim 16.

Concerning Claim 17, Gilbert discloses:

the power sharing circuit comprises:

a voltage regulator coupled in series between the power supply interface and the load circuit (Figure 1, Item 46; Paragraph 16, Lines 9-11).

a resistive device coupled in series between the voltage regulator and the load circuit.

Gilbert does not, however, mention a resistive device coupled in series with the voltage regulator.

The voltage regulator described in the claim can be implemented using a zener diode. The applicant states in the specification that the resistive device mentioned in this claim has a "function similar to the resistor 82 of FIG. 3 in that . . . the resistor 92 causes the voltage to drop on the power supplied by the computer bus" (Page 7, Lines 25-27). The purpose of the voltage regulator in the claim, therefore, need only provide the same benefits of a zener diode described in *Zener Regulators* to provide a voltage regulating circuit. Although the voltage regulator is put in series with the power interface and the load when the zener diode is put in parallel, these can

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still be considered equivalent because the connections of the zener diode may be easily generalized so that it appears to be in series. As mentioned in the Claim 5 rejection above, it is obvious to a person of ordinary skill in the art to use a zener regulator described by *Zener Regulators* as the voltage regulator taught by Gilbert.

Allowable Subject Matter

12. Claims 23, 24 and 28 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is an examiner's statement of reasons for allowance:

Concerning Claim 23, Gilbert discloses:

requesting the external power source to provide all the power requirements of the load circuit *up to* the threshold amount.

Gilbert does not disclose:

requesting the external power source to provide all the power requirements of the load circuit above the threshold amount.

The prior art neither discloses nor provides motivation for using an external power source to provide additional power when the power demanded exceeds a certain threshold. Therefore, at the time of the invention, it would not have been obvious to a person of ordinary skill in the art to modify Gilbert to offer additional power beyond a power threshold.

Concerning Claim 28, Gilbert discloses:

requesting the external source to provide all the power used by the load circuit *until* the amount of power drawn from the external source exceeds the threshold level.

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Gilbert does not disclose:

requesting the external source to provide all the power used by the load circuit if the amount of power drawn from the external source exceeds the threshold level.

The prior art neither discloses nor provides motivation for using an external power source to provide additional power when the power demanded exceeds a certain threshold. Therefore, at the time of the invention, it would not have been obvious to a person of ordinary skill in the art to modify Gilbert to offer additional power beyond a power threshold.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


LYNNE H. BROWNE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600 2100

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A. Henry whose telephone number is (571) 272-3845. The examiner can normally be reached on Monday - Friday (8:00 am -5:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (571) 272-3670. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAH